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| 10/802,533 | 03/17/2004 | Kevin Barry Ray | 01288US (EKC 90053) | 3502 |
| 1333 | 7590 | 02/28/2006 | EXAMINER | |
| BETH READ PATENT LEGAL STAFF EASTMAN KODAK COMPANY 343 STATE STREET ROCHESTER, NY 14650-2201 | | | WALKE, AMANDA C | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1752 | |
| DATE MAILED: 02/28/2006 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,533

Applicant(s)

RAY ET AL.

Examiner

Amanda C. Walke

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

In light of applicant's arguments in the response of 2/10/2006, the rejections made in the previous office action have been dropped and a new rejection follows.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

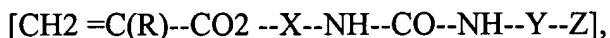
2. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Savariar-Hauck et al (WO 01/96119) in view of Houlian (6,111,133) or Houlihan et al (4,996,136).

Savariar-Hauck et al disclose thermally imageable element, useful as a lithographic printing plate precursor is disclosed. The element comprises a hydrophilic substrate; an underlayer comprising a first polymeric material; and an ink-receptive top layer comprising a second polymeric material and a solubility-suppressing component. The solubility-suppressing component may be a separate dissolution inhibitor compound and/or the second polymeric material may also function as a solubility-suppressing component. On thermal exposure the exposed regions of the top layer becomes more readily soluble in an aqueous developer, allowing the developer to remove the top layer and reveal the surface of the hydrophilic substrate. The lithographic printing plate thus formed has excellent properties, including the absence of sludging of the developer. The underlayer comprises a first polymeric material. The first polymeric material is soluble in an aqueous alkaline developer. In addition, the first polymeric material should be insoluble in the solvent used to coat the top layer so that the top layer can be

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coated over the underlayer without dissolving the underlayer. Polymeric materials useful as the first polymeric material include those that contain an acid and/or phenolic functionality, and mixtures of such materials. Useful polymeric materials include carboxy functional acrylics, vinyl acetate/crotonate/vinyl neodecanoate copolymers, styrene maleic anhydride copolymers, phenolic resins, maleated wood rosin, and combinations thereof. Particularly useful polymeric materials are copolymers that comprise N-substituted maleimides, especially N-phenylmaleimide; polyvinylacetals; methacrylamides, especially methacrylamide; and acrylic and/or methacrylic acid, especially methacrylic acid. More preferably two functional groups are present in the polymeric material, and most preferably all three functional groups are present in the polymeric material. The preferred polymeric materials of this type are copolymers of N-phenylmaleimide, methacrylamide, and methacrylic acid, more preferably those that contain about 25 to about 75 mol %, preferably about 35 to about 60 mol % of *N-phenylmaleimide*; about 10 to about 50 mol %, preferably about 15 to about 40 mol % of *methacrylamide*; and about 5 to about 30 mol %, preferably about 10 to about 30 mol %, of *methacrylic acid*. Other hydrophilic monomers, such as hydroxyethyl methacrylate, may be used in place of some of all of the *methacrylamide*. Other aqueous alkaline soluble monomers, such as acrylic acid, may be used in place of some or all of the methacrylic acid. Another group of preferred polymeric materials for the first polymeric material are aqueous alkaline developer soluble copolymers that comprise a monomer that has a urea bond in its side chain (i.e., a pendent urea group), such are disclosed in Ishizuka, U.S. Pat. No. 5,731,127, incorporated herein by reference. These copolymers comprise about 10 to 80 wt %, preferably about 20 to 80 wt %, of one of more monomers represented by the general formula:

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in which R is --H or --CH₃ ; X is a bivalent linking group; Y is a substituted or unsubstituted bivalent aromatic group; and Z is --OH, --COOH, or --SO₂ NH₂. Another group of polymeric materials that are useful in the underlayer include aqueous alkaline developer soluble copolymers that comprise about 10 to 90 mol % of a sulfonamide monomer unit, especially those that comprise N-(p-aminosulfonylphenyl)methacrylamide, N-(m-aminosulfonylphenyl)methacrylamide N-(o-aminosulfonylphenyl)methacrylamide, and/or the corresponding acrylamide. Useful alkaline developer soluble polymeric materials that comprise a pendent sulfonamide group, their method of preparation, and monomers useful for their preparation, are disclosed in Aoshima, U.S. Pat. No. 5,141,838, incorporated herein by reference. Particularly useful polymeric materials comprise (1) the sulfonamide monomer unit, especially N-(p-aminosulfonylphenyl)methacrylamide; (2) acrylonitrile and/or methacrylonitrile; and (3) methyl methacrylate and/or methyl acrylate. These polymeric materials are typically resistant to washes with 80 wt % 2-butoxyethanol/20 wt % water. Combination of (1) a copolymer that comprises N-substituted maleimides, especially N-phenylmaleimide; methacrylamides, especially methacrylamide; and acrylic and/or methacrylic acid, especially methacrylic acid (2) with an alkaline soluble copolymer that comprises a urea in its side chain or with an alkaline soluble copolymer that comprises 10 to 90 mol % of a sulfonamide monomer unit, especially one that comprise *N-(p-aminosulfonylphenyl)methacrylamide*, N-(m-aminosulfonylphenyl)methacrylamide N-(o-aminosulfonylphenyl)methacrylamide, and/or the corresponding acrylamide, is especially advantageous. One or more other polymeric materials, such as novolac resins, may also be present in the combination. Preferred other polymeric

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materials, when present, are novolac resins. The underlayer may comprise a photopolymerizable composition. Preferred photosensitive compositions are photopolymerizable compositions, which comprise one of monomers, one or more binders, and one or more photoinitiator systems. Other components conventionally added to photopolymerizable compositions can be present to modify the physical properties of the film. Such components include: for example, plasticizers, thermal stabilizers, adhesion modifiers, coating aids, and release agents. Nonionic surfactants, for example, may be added to the photopolymerizable composition as coating aids. Such systems are well known in art. Photopolymerizable compositions comprise at least one ethylenically unsaturated compound that undergoes free-radical initiated polymerization, generally known as a monomer. The monomers are typically multifunctional, i.e., they comprise more than one ethylenically unsaturated, free radical polymerizable group. Typical multifunctional monomers are unsaturated esters of alcohols, preferably acrylate and methacrylate esters of polyols, such as, *trimethylolpropane triacrylate* and trimethacrylate, pentaerythritol triacrylate and trimethacrylate, pentaerythritol tetraacrylate and tetramethacrylate, ethoxylated-trimethylolpropane triacrylate and trimethacrylate, glycerolpropoxy triacrylate and trimethacrylate, ethyleneglycol diacrylate and dimethacrylate, tripropyleneglycol diacrylate and dimethacrylate, and tetraethyleneglycol diacrylate and dimethacrylate. Oligomers and/or prepolymers, such as urethane acrylate and methacrylate, epoxide acrylate and methacrylate, polyester acrylate and methacrylate, polyether acrylate and methacrylate or unsaturated polyester resins, may also be used. Numerous other unsaturated monomers polymerizable by free-radical initiated polymerization and useful in photopolymerizable compositions are known to those skilled in the art. The underlayer absorbs radiation, preferably radiation in the range of about 800

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nm to 1200 nm, the range of radiation commonly used for imaging thermally imageable elements. An absorber, sometimes referred to as "a photothermal conversion material" is present in the underlayer. Photothermal conversion materials absorb radiation and convert it to heat. Photothermal conversion materials may absorb ultraviolet, visible, and/or infrared radiation and convert it to heat. Although the first polymeric material may itself comprise an absorbing moiety, i.e., be a photothermal conversion material, typically the photothermal conversion material is a separate compound. The imaging radiation absorber may be either a dye or pigment, such as a dye or pigment of the squarylium, merocyanine, indolizine, pyrilium or metal dithiolene class. Examples of absorbing pigments are Projet 900, Projet 860 and Projet 830 (all available from the Zeneca Corporation). Carbon black pigments may also be used. Because of their wide absorption bands, carbon black-based plates can be used with multiple infrared imaging devices having a wide range of peak emission wavelengths. The top layer, or second layer, comprises a second polymeric material, which is ink-receptive and dissolves in an aqueous alkaline developer. However, the top layer is insoluble in aqueous alkaline developer prior to imaging, but becomes soluble in aqueous alkaline developer following imaging. Second polymeric materials that are water insoluble, but dissolve in an aqueous alkaline developer, are used to prevent sludging of the developer. Typically the underlayer absorbs imaging radiation, i.e., infrared radiation and radiation in the range of 600 nm to 1200 nm, especially in the range of 800 nm to 1200 nm, and the top layer does not substantially absorb imaging radiation, i.e., infrared radiation and radiation in the range of 600 nm to 1200 nm, especially in the range of 800 nm to 1200 nm. Polymers that contain phenolic hydroxyl groups, i.e., phenolic resins, are preferred. Preferably the polymeric material is a light-stable, water-insoluble, aqueous alkaline developer-soluble, film-forming

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polymeric material that has a multiplicity of phenolic hydroxyl groups, either on the polymer backbone or on pendant groups. Phenolic groups impart aqueous alkaline developer solubility to the top layer and are also believed to form a thermally frangible complex with the solubility-suppressing component. Novolac resins, resol resins, acrylic resins that contain pendent phenol groups, and polyvinyl phenol resins are preferred phenolic resins. Novolac resins are more preferred. Novolac resins are commercially available and are well known to those skilled in the art. They are typically prepared by the condensation reaction of a phenol, such as phenol, m-cresol, o-cresol, p-cresol, etc, with an aldehyde, such as formaldehyde, paraformaldehyde, acetaldehyde, etc. or ketone, such as acetone, in the presence of an acid catalyst. The weight average molecular weight is typically about 1,000 to 15,000. Typical novolac resins include, for example, phenol-formaldehyde resins, cresol-formaldehyde resins, phenol-cresol-formaldehyde resins, p-t-butylphenol-formaldehyde resins, and pyrogallol-acetone resins. Particularly useful novolac resins are prepared by reacting m-cresol, mixtures of m-cresol and p-cresol, or phenol with formaldehyde using conventional conditions. Other useful phenolic resins include polyvinyl compounds having phenolic hydroxyl groups. Such compounds include, for example, polyhydroxystyrenes and copolymers containing recurring units of a hydroxystyrene, and polymers and copolymers containing recurring units of substituted hydroxystyrenes. When a photothermal conversion material is present in the top layer, it may comprise infrared absorber or dye bound to a phenolic material (i.e., a phenolic material derivatized with an infrared absorber or infrared absorbing dye). If an appropriate infrared absorber or dye is selected, the derivatized polymeric material can act as the second polymeric material, the solubility-suppressing component, and/or the photothermal conversion material. Metal supports include aluminum,

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zinc, titanium, and alloys thereof. A preferred metal support is an aluminum sheet. The surface of the aluminum sheet may be treated by techniques known in the art, including physical graining, electrochemical graining, chemical graining, and anodizing, and then conditioned by chemical means, for example by treatment with water, a solution of phosphate or silicate salt, or a polycarboxylic acid to produce the hydrophilic surface.

While the reference teaches that various hydroxystyrene monomers (both substituted and unsubstituted) are employed in the top layer, the reference fails to specifically discuss the addition of a protected hydroxystyrene monomer.

Both Houlihan references teach that in lithographic applications it is well known to modify hydroxystyrene resins by adding a reactive substituent such as t-butoxycarbonyloxystyrene, which meets the instant claim limitations for the polymer of the second layer.

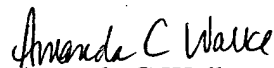
Therefore, given the teachings of the references, it would have been obvious to modify the hydroxystyrene resin in the top layer of Savariar-Hauck with the alkoxycarbonyloxy groups taught to be more reactive by either Houlihan reference, with reasonable expectation of achieving an improved material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amanda C. Walke whose telephone number is 571-272-1337. The examiner can normally be reached on M-R 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Amanda C Walke
Examiner
Art Unit 1752

ACW
February 24, 2006